

CLAIMS

1. A Fresnel lens sheet having an entrance surface and an exit surface, the entrance surface being provided with a plurality of total reflection Fresnel lens elements;

wherein each of the total reflection Fresnel lens elements has a light-receiving facet on which image light falls, and a total-reflection facet that totally reflects the image light fallen on the light-receiving facet toward the exit surface, and

horizontal length L_1 (mm) of the Fresnel lens sheet, thickness T_1 (mm) of the Fresnel lens sheet and maximum elongation percentage A_1 (%) of the Fresnel lens sheet at which the Fresnel lens sheet lengthens due to moisture absorption of the Fresnel lens sheet, meet a requisite condition expressed by a relational expression: $A_1 \leq 0.6T_1/L_1$.

2. A Fresnel lens sheet comprising:

a Fresnel lens having an entrance surface provided with a plurality of total reflection Fresnel lens elements; and

a base sheet having an exit surface;

wherein each of the total reflection Fresnel lens elements has a light-receiving facet on which image light falls, and a total-reflection facet that totally reflects the image light fallen on the light-receiving facet toward the exit surface, and

horizontal length L_2 (mm) of the base sheet, thickness T_2 (mm) of the base sheet and maximum elongation percentage A_2 (%) of the base sheet at which the base sheet lengthens due to moisture absorption of the base sheet, meet a requisite condition expressed by a relational expression: $A_2 \leq 0.6T_2/L_2$.

3. The Fresnel lens sheet according to claim 1 or 2, wherein

the Fresnel lens sheet has a Fresnel lens element

sheet provided with the total reflection Fresnel lens elements, and an auxiliary sheet attached to an exit side of the Fresnel lens element sheet.

4. The Fresnel lens sheet according to claim 3, wherein

the auxiliary sheet is a lenticular lens sheet provided with a lenticular lens.

5. The Fresnel lens sheet according to claim 3, wherein

the Fresnel lens element sheet and the auxiliary sheet are formed of the same material.

6. The Fresnel lens sheet according to claim 1 or 2, wherein

further comprises a light-diffusing material that diffuses light.

7. The Fresnel lens sheet according to claim 1 or 2,

wherein the Fresnel lens sheet is colored to absorb light.

8. The Fresnel lens sheet according to claim 1 or 2, further comprising a light-absorbing part.

9. The Fresnel lens sheet according to claim 1 or 2 further comprising antireflection layers coating both the entrance surface and the exit surface of the Fresnel lens sheet, or an antireflection layer coating either the entrance surface or the exit surface of the Fresnel lens sheet.

10. A rear projection screen comprising:

a Fresnel lens sheet having an entrance surface and an exit surface, the entrance surface being provided with a plurality of total reflection Fresnel lens elements; and

a lenticular lens formed on the exit surface of the Fresnel lens sheet;

wherein each of the total reflection Fresnel lens elements has a light-receiving facet on which image

light falls, and a total-reflection facet that totally reflects the image light fallen on the light-receiving facet toward the exit surface, and

horizontal length L_1 (mm) of the Fresnel lens sheet, thickness T_1 (mm) of the Fresnel lens sheet and maximum elongation percentage A_1 (%) of the Fresnel lens sheet at which the Fresnel lens sheet lengthens due to moisture absorption of the Fresnel lens sheet, meet a requisite condition expressed by a relational expression: $A_1 \leq 0.6T_1/L_1$.

11. A rear projection screen comprising:

a Fresnel lens sheet comprising a Fresnel lens having an entrance surface provided with a plurality of total reflection Fresnel lens elements, and a base sheet having an exit surface; and a lenticular lens formed on the exit surface of the Fresnel lens sheet;

wherein each of the total reflection Fresnel lens elements has a light-receiving facet on which image light falls, and a total-reflection facet that totally reflects the image light fallen on the light-receiving facet toward the exit surface, and

horizontal length L_2 (mm) of the base sheet, thickness T_2 (mm) of the base sheet and maximum elongation percentage A_2 (%) of the base sheet at which the base sheet lengthens due to moisture absorption of the base sheet meet a requisite condition expressed by a relational expression: $A_2 \leq 0.6T_2/L_2$.

12. The rear projection screen according to claim 10 or 11 further comprising antireflection layers coating both the entrance surface and the exit surface of the Fresnel lens sheet or an antireflection layer coating either the entrance surface or the exit surface of the Fresnel lens sheet

13. A rear projection display comprising a Fresnel lens sheet having an entrance surface and an exit surface, the entrance surface being provided with a

plurality of total reflection Fresnel lens elements;

wherein each of the total reflection Fresnel lens elements has a light-receiving facet on which image light falls, and a total-reflection facet that totally reflects the image light fallen on the light-receiving facet toward the exit surface, and

horizontal length L_1 (mm) of the Fresnel lens sheet, thickness T_1 (mm) of the Fresnel lens sheet and maximum elongation percentage A_1 (%) of the Fresnel lens sheet at which the Fresnel lens sheet lengthens due to moisture absorption of the Fresnel lens sheet, meet a requisite condition expressed by a relational expression: $A_1 \leq 0.6T_1/L_1$.

14. A rear projection display comprising a Fresnel lens sheet comprising a Fresnel lens having an entrance surface provided with a plurality of total reflection Fresnel lens elements, and a base sheet having an exit surface;

wherein each of the total reflection Fresnel lens element has a light-receiving facet on which image light falls, and a total-reflection facet that totally reflects the image light fallen on the light-receiving facet toward the exit surface, and

the horizontal length L_2 (mm) of the base sheet, thickness T_2 (mm) of the base sheet and maximum elongation percentage A_2 (%) of the base sheet at which the base sheet lengthens due to moisture absorption of the base sheet meet a requisite condition expressed by a relational expression: $A_2 \leq 0.6T_2/L_2$.

15. A rear projection display comprising a rear projection screen comprising

a Fresnel lens sheet having an entrance surface and an exit surface, the entrance surface being provided with a plurality of total reflection Fresnel lens elements; and

a lenticular lens formed on the exit surface of the

Fresnel lens sheet;

wherein each of the total reflection Fresnel lens elements has a light-receiving facet on which image light falls, and a total-reflection facet that totally reflects the image light fallen on the light-receiving facet toward the exit surface, and

horizontal length L_1 (mm) of the Fresnel lens sheet, thickness T_1 (mm) of the Fresnel lens sheet and maximum elongation percentage A_1 of the Fresnel lens sheet (%) at which the Fresnel lens sheet lengthens due to moisture absorption of the Fresnel lens sheet, meet a requisite condition expressed by a relational expression: $A_1 \leq 0.6T_1/L_1$.

16. A rear projection display comprising a rear projection screen comprising

a Fresnel lens sheet having an entrance surface provided with a plurality of total reflection Fresnel lens elements; and a base sheet having an exit surface, and

a lenticular lens formed on the exit surface of the Fresnel lens;

wherein each of the total reflection Fresnel lens elements has a light-receiving facet on which image light falls, and a total-reflection facet that totally reflects the image light fallen on the light-receiving facet toward the exit surface, and

the horizontal length L_2 (mm) of the base sheet, thickness T_2 (mm) of the base sheet and maximum elongation percentage A_2 (%) of the base sheet at which the base sheet lengthens due to moisture absorption of the base sheet, meet a requisite condition expressed by a relational expression: $A_2 \leq 0.6T_2/L_2$.